PROGRESS
OF
MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF
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The Passage of Pancreatic and Intestinal Juices and of Bile into the Stomach.—Boldyreff (*Zentralbl. f. d. med. Wissensch.*, 1908, xlvi, 194; *Pflüger's Archiv*, cxxi, 13) has made a complete review of the literature concerning this question before giving the results of his own observations. His work was done upon dogs in which a gastric fistula had been produced. Boldyreff found that there was a passage of pancreatic and intestinal juices and of bile into the stomach, and that this occurred under definite conditions, the result, apparently, of physiological demands. This passage occurs not occasionally as a result of antiperistalsis, but constantly when the proper conditions exist. The physiological causes of the entrance of duodenal contents into the stomach are the following: (1) The placing of fat in the empty stomach; (2) the feeding of fat-rich food; (3) the presence of large quantities of hydrochloric acid in the stomach, whether at the height of digestion or from secretion of acid into the empty stomach; and (4) the presence of other acids in the stomach, such as lactic, acetic, butyric. Occasionally no cause was demonstrable. The addition of the duodenal secretions led to a destruction of the pepsin, since the gastric contents no longer showed digestion of proteins after they had been rendered acid. In a dog whose stomach was shut off from the duodenum, no digestion of fat took place. Boldyreff was able to show on himself and another person by passage of the stomach tube after taking 80 to 100 grams of oil, that the pancreatic juice had passed into the stomach. This procedure may be of use in obtaining pancreatic juice for diagnostic purposes. The observations show that after ingestion of considerable fat the digestion in the stomach is performed mainly by the pancreatic ferments, and further, that in healthy adults one need not expect to find pepsin or hydrochloric acid in the gastric contents, if there has been an admixture of intestinal juice.

A New Method for the Quantitative Determination of Pepsin.—Solms (*Deut. Arch. f. klin. Med.*, 1907, lxiv, 159) believes that the method he has devised is the most accurate yet proposed for the quantitative estimation of pepsin. Two solutions are required: (1) $\frac{N}{10}$ hydrochloric acid, and (2) 1 per cent. solution of ricin in a 5 per cent. aqueous solution of NaCl. Solution 2 is filtered; the filtrate is slightly turbid and becomes milky on the addition of the decinormal acid. Pepsin is capable of rendering clear a turbid ricin solution. The technique is as follows: The gastric contents are removed an hour after the Ewald test breakfast, as usual. The free hydrochloric acid, if present, is then determined quantitatively, likewise the total acidity. The gastric juice is now diluted, according to the degree of the acidity (the total acidity is taken as a guide, 40 to 60 being considered normal). With normal acidity the gastric juice is diluted 1 to 100 (to 1 to 1000); with hyperacidity 1 to 100 (to 1 to 10,000); with anacidity or marked subacidity 1 to 10 (to 1 to 100). For the sake of clearness the following examples may be quoted: With a graduated pipette 2 c.c. of the filtered ricin solution is placed in each of five test-tubes. With a second pipette 0.5 gram of decinormal HCl is added to each of these tubes, rendering the fluid very turbid. Now one adds to the first tube 1 c.c. of boiled gastric juice (ferment destroyed), to the second tube 0.9 c.c., to the third 0.8 c.c., to the fourth 0.5 c.c., and to the fifth 0 c.c. Then take the diluted gastric juice whose pepsin content is to be determined (1 to 100 dilution for normal juice) and to the first tube (containing the ricin solution, tenth normal acid, and boiled gastric juice) add 0 c.c. of it, to the second 0.1 c.c., to the third 0.2 c.c., to the fourth 0.5 c.c. and to the fifth 1.0 c.c. Thus, each test-tube contains about 3.5 c.c. of fluid. The tubes are stoppered and placed in the incubator for three hours, or at room temperature for a longer time, when they are examined; observe which of the tubes contains a clear fluid. For purposes of convenience Solms says that a gastric juice has 100 pepsin units when 1 c.c. of a 1 to 100 dilution of the juice clears the ricin solution after three hours in the incubator. In examining normal gastric juices, as judged by the acidity values, the author finds that 100 pepsin units is a normal quantity of pepsin, although with normal acidities he has obtained as much as 200 to 500 pepsin units. With anacidity and low total acidity the pepsin values were constantly low, about 10 to 20 units or less. Hyperacidity, on the other hand, does not usually show a corresponding increase in the amount of pepsin, the amount being normal generally. Thus far the author can see no aid in a diagnostic or therapeutic way to be obtained from the quantitative determination of the pepsin in the gastric contents. The method apparently marks a distinct advance in simplicity and accuracy.

Banti's Disease, with Report of Two Cases.—W. Oettinger and N. Fiessinger (*Revue de méd.*, 1907, xxvii, 1109) state that since Banti first described the condition named after him, about thirteen years ago, despite the interest which has been shown in it, the pathogenesis has remained somewhat obscure. Some have thought that the process arose first in the liver and subsequently affected the spleen, while others assert that the spleen is first affected, and by its close connection with the liver by means of the portal system may transfer easily the pathological cause to that organ. It is naturally important to settle this question. If the spleen be the point of origin, splenectomy might be expected to arrest the process. In the two cases reported by Oettinger and Fiessinger this previous involvement of the spleen before alteration of the liver was definitely made out. Pathologically, the liver showed no cirrhosis beyond some sclerosis surrounding the portal veins; the hepatic veins, the biliary system, and the hepatic arteries were normal. The splenic vein from its entrance into the portal system and toward the spleen showed a marked endophlebitis, whereas the rest of the portal system, especially the mesenteric portion, was apparently normal. The spleen itself in both instances was markedly altered, and showed much sclerosis of the normal soft, pulpy portion. This change in the spleen has been shown to be due to a hemolytic process, the cause of which is not noted by Oettinger and Fiessinger; they conclude, however, from their study that these hemolytic poisons travel along the splenoportal system, as shown by the endophlebitis, and ultimately the liver is affected. These facts, they say, indicate the need of early surgical interference; splenectomy, especially in the early slow development of the disease, offers the only chance for a cure.

The Presence of Spirochetes in Pseudoleukemia, Acute Lymphatic Leukemia, and Lymphosarcoma.—W. E. White and F. Proescher (*New York Med. Jour.*, 1908, lxxxvii, 9), having previously found spirochetes in the glands of pseudoleukemia and also in the fluid aspirated from the glands in a case of acute lymphatic leukemia, were led to work along these lines, and this study is based on fourteen cases of the above diseases, from the glands of which, whether removed from living patients or obtained at autopsy, similar spirochetes were found. From one of the lymphosarcoma cases White and Proesher were able to transfer a purely glandular affection to a guinea-pig by a subcutaneous inoculation from one of the sarcomatous glands. This they have transferred through four generations of animals, recovering in each the same organism. The spirochete differs from those previously described in its great length and the shallowness of the curves of its body, and may be seen in the freshly expressed juice of the glands or in sections stained by Levaditi's method, or in smears following the method of Proescher. White and Proescher give the name Spirochæta lymphatica to the organism, but say further study is necessary before its relation to the disease can be definitely proved. However, they have never been able to find it in normal or tuberculous glands and the fact of finding these organisms in the different members of this more or less closely allied group of diseases, and the ability to transfer one type of it to four generations of guinea-pigs and recover the organism in each case, have led White and Proescher to suggest the following classification of this disease based upon this supposed etiology: Lymphatic spirillosis: Acute form—(*a*) with lymphocytosis, and (*b*) without lymphocytosis; chronic form—(*a*) benign, without sarcomatous change or with sarcomatous change, and (*b*) malign, with sarcomatous change or without sarcomatous change.

Gumma of the Heart.—H. HUCHARD and NOEL FIESSINGER (*Revue de méd.*, 1907, xxvii, 948), on account of the lack of definite symptoms and obscurities in diagnosis of gumma of the heart, give a most careful review of the literature on the subject and report in detail a case of their own. The first reported case in the literature dates back to 1775, and subsequently many others have been reported. They are briefly summarized by Huchard and Fiessinger who note the following points: As regards etiology, males are more commonly affected than females—about 60 per cent. of 47 cases. Twenty-two of these occurred between the ages of thirty-one and forty years; the left ventricle was most commonly affected. As regards the clinical manifestations of the trouble, Huchard and Fiessinger point to no definite syndrome, but note the importance, in old syphilitics, of a history of gradually progressive dyspnœa, œdema, and cyanosis. The pulse is often small, rapid, of high tension, and at times irregular. The heart and liver may be enlarged and albuminuria and polyuria present. The gummas are so often latent, however, that few symptoms develop until sudden death occurs and the diagnosis is made at autopsy. In concluding, Huchard and Fiessinger report several cases from the literature in which cardiac conditions developing in luetic patients have been either cured or greatly improved by specific treatment associated with very little cardiac therapy, and say that this is the best proof of the diagnosis of a syphilitic cardiac affection, whether gummatous or otherwise, and that a specific form of treatment, in doubtful cases, may even help some non-luetic affections, while in the positive cases a cure which could never be reached by ordinary cardiac treatment, is attained.

Experimental Syphilis.—ELIE METCHNIKOFF (*Revue de méd.*, 1907, xxvii, 952) reviews the experimental work that has been done up to the present time on the higher apes and other animals, and the more modern methods for diagnosis. As regards prophylaxis, the use of serums, vaccines, and other things being so unsatisfactory, the author and M. Roux were led to experiment with an ointment having a mercurial base, which was found, if applied within eighteen hours after inoculation, to prevent the infection without, however, conferring any immunity against future inoculation. Of the many preparations used, the best was found to be 25 to 33 per cent. calomel, with from 75 to 67 per cent. of lanolin. After many successful experiments on animals, a final test was made with the consent of a young doctor, who, one hour after inoculation with a syphilitic virus was treated with a calomel ointment (25 per cent.), and after one year has shown absolutely no signs of any luetic disease. Metchnikoff hopes that the systematic use of this calomel ointment may reduce the great frequency of this dread disease. As regards treatment, Metchnikoff speaks of mercurial injections and also of the lately advocated use of the arsenical preparation (atoxyl), which, it may be hoped, will in future give better results.

Renal Complications and Sequels of Influenza.—H. STERN (*Medical Record*, 1908, lxxii, 46) notes that there is a lack of consideration paid to the renal troubles that may be traced to influenza, possibly owing to their slight character at first or the lack of care bestowed upon the patient after the more prominent phenomena of influenza have subsided. Stern distinguishes three forms of complications: (1) Cases with acute symptoms of renal involvement; (2) cases in which there occurs an aggravation of a preëxisting renal disease; and (3) postinfluenzal nephritis. As regards the first group, there may be simply the usual febrile congestion, such as may accompany any acute infectious disease which rapidly clears up after convalescence, but in a few cases, about 2 to 4 per cent., there may be an acute nephritis of a more or less severe type due directly to the influenza. The second variety is of decided importance as regards prognosis, especially as influenza may light up a latent nephritis, which has previously shown few or no symptoms, into a much more serious and even fatal process. The third class is of importance, especially in those cases of influenza with a long protracted convalescence; it is in this class that subsequently the signs and symptoms of renal inefficiency gradually develop. Thus, of 14 cases of protracted convalescence and general systemic decline after an attack of influenza, that were examined by the author, in from three to ten weeks after the attack, 7 showed some impairment of renal function, and 2 others definite renal disease.

Alimentary Poisons and Atheroma.—M. LOEPER (*Arch. d. maladies du cœur, des vaisseaux, et du sang,* 1908, i, 45) asserts that various organic lesions have their origin in the digestive tract, toxic products being absorbed; the cardiovascular system may be among the first to suffer from the irritant action of such poisons. He divides the alimentary intoxications into four classes: those which result from the direct poison of certain foodstuffs; those which result from their alteration and change; those arising from their putrefaction; and finally, those which result from the ultimate destruction of certain nutritive products in the tissues. The first class may come from some of the vegetables, fishes, ordinary meats, and drink; the second, from game, sweetmeats, and fowl; the third, from products of intestinal putrefaction; and the fourth from the bodily excretions, as lactic acid, uric acid, and perhaps also creatin and creatinin. Loeper's experiments with these different substances were made on rabbits with a resulting sclerosis of more or less severe degree (this is illustrated in plates), and although Loeper says the doses of these poisons may have been larger and more severe in animals than in man, yet the repeated absorption in the human being of minute doses of these poisons will result in the same condition. Knowing this to be so, he concludes that, either in health or disease, the prescription of certain diets or the forbidding of foodstuffs giving rise to the above-mentioned products may prevent or at least alleviate an arteriosclerosis that might progressively increase, an "atoxic regime" being, of course, the ideal, which, however, is hard to attain.

Along these same lines another article is that on "experimental work arteriosclerosis," by OSCAR KLOTZ (*Montreal Medical Journal,* 1908, xxxvii, 16), who notes the factor of work and increased arterial pressure on the arteries in producing sclerosis. It has been noted clinically in the adult that vessels of the more active organs show hypertrophy and sclerosis earlier than in the less active parts. In right-handed persons the radials on that side are considerably more sclerosed than on the left, and the reverse is true in left-handed persons. The same is true for those who walk much or are on their feet frequently, the most advanced arterial changes in these persons being in the vessels of the legs. These facts all point to the prominent part played by work in arteriosclerosis. To find out whether this factor of work alone unaided by toxic agents could produce sclerotic changes, the author experimented on healthy nine-months-old rabbits by suspending them by their hind legs for a few minutes a day over a long period of time, thus causing not only increased work, but also, by the inverted position, considerable increase in pressure in the thoracic aorta above the normal, and this without the aid of drugs. At autopsy macroscopical and microscopical changes could easily be made out in the aorta and its branches above the renal vessels. There were two kinds of changes noted in the vessels, one in the intima alone, and the other in the media. In the latter type degenerative changes occur and fusiform aneurysms are formed. Klotz concludes that from these experiments work plays a very important role in the production of arteriosclerosis of different character; that even in vessels of different histological structure sclerotic changes can be brought out by increased work; and further, that as a consequence of certain changes, degenerative in character, taking place as the result of increased work in the media of the vessels, aneurysms may result.

SURGERY.

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A Contribution to the Study of Jejunostomy.—Delore and Thevenot (*Archiv gén d. chir.*, 1908, ii, 237) say that jejunostomy does not merit the discredit into which it has fallen, in the view of many surgeons. The results are good when a simple technique is employed. Preference is given to two methods of operation: the one proposed by Druebert in which a canal is made leading out from the intestine between the serous and the muscular coats of the intestine; the other proposed by Eiselberg and Witzel in which the canal is made along the wall of the intestine by plicating it over a catheter as in the similar method of performing a gastrostomy. The chief object of any method is to obtain an opening in the bowel which will be continent. It should be one that can be easily and rapidly made and one that may be only temporary.